

REMARKS

Applicant has thoroughly considered the Examiner's remarks and claims 1-5, 8-26, 31, 32, and 37-40 are now presented in this application for further examination. Claims 1-5, 8-26, 31, 32, and 37-40 have been amended, claims 27, 28, and 33-36 have been canceled by this Amendment D to more clearly set forth the invention. Reconsideration of the application in view of the following remarks is respectfully requested.

Claim Rejections under 35 U.S.C. § 112

Claims 27-29, and 31-36, 39, and 40 stand rejected under 35 USC §112 as failing to comply with the written description requirement. Claims 27-29, and 31-36, 39, and 40 have been canceled and Applicant requests that the Office withdraw the rejection under 35 U.S.C. §112, first paragraph.

Claim Rejections under 35 U.S.C. § 103

Claims 1-11, 14, 15, 23-28, and 33-35 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Pat. No. 6,587,093 to Shaw et al. (hereinafter "Shaw") in view of U.S. Patent No. 6,859,141 to Van Schyndel et al. (hereinafter "Van Schyndel").

The Office explains that Shaw teaches a mouse with a touch sensor (e.g., scroll wheel) configured to interact with a user's finger. Shaw discloses that a "processor measures the total amount of finger signal as well as the finger position, and generates a scrolling signal only when sufficient finger signal is present" and the "processor compares the total summed capacitance on all sensors against a threshold to determine finger presence or absence." (Column 10, lines 40-49). With respect to tracking along a tracking surface, Shaw teaches a roller ball embodiment where capacitance detectors are placed in several locations inside the roller ball cavity to measure movement of the ball. (FIG. 6; column 7, lines 24-31).

The Office explains that Van Schyndel teaches a sensor having an effective sensing range, the sensor processing the signals when an object approaches to within the sensing range; when no object is present within the effective sensing range of the detector, no signal is processed. (Column 6, lines 40 - column 7, line 35). Thus, Van Schyndel merely discloses a sensor that determines whether a physical object is **within the sensing range** of the detector.

Claim 1

Claim 1, as amended, discloses **a handheld optical mouse device** for tracking relative movement between said handheld optical mouse device and a tracking surface:

an impedance sensor arranged with respect to a tracking surface, said impedance sensor having a measurement zone within which said impedance sensor measures an electrical capacitance ; and

a controller responsive to the measured capacitance of said impedance sensor for **determining a distance of spatial separation between the handheld optical mouse device and the tracking surface relative to one another** as a function of the measured capacitance, **the handheld optical mouse being removable from the tracking surface**, said controller initiating a non-tracking mode in which **said controller suspends tracking of relative movement between said handheld optical mouse device and said tracking surface when said handheld optical mouse device removed from the tracking surface and is spatially separated from said tracking surface by at least a lift-off detection distance**, said controller further being responsive to the measured capacitance of said impedance sensor for determining a direction of relative movement between said handheld optical mouse device and said tracking surface as a function of the measured capacitance.

The amendments are supported in paragraphs 3-5, 27 and FIGS. 2 and 8. Independent claim 1 has been amended to include a controller responsive to the measured capacitance of said impedance sensor for **determining a distance of spatial separation between the handheld optical mouse device and the tracking surface relative to one another** as a function of the measured capacitance, **the handheld optical mouse being removable from the tracking surface**.

The Office correctly notes that Shaw does not disclose determining the relative distance between the input device and the tracking surface as a function of the measured impedance. Van Schyndel teaches a proximity capacitance sensor comprising one transmitting electrode and one receiving electrode, the sensor generates an electric field from the transmitting electrode and detects the electric field at the receiving electrode. Van Schyndel also teaches the sensor having an effective sensing range, the sensor processes the signals when an object approaches to within the sensing range, when no object is present within the effective sensing range of the detector, no signal is processed.

Even if the mouse taught by Shaw was modified by teachings of Van Schyndel the mouse would not determine **a distance of spatial separation between the handheld optical mouse**

device and the tracking surface relative to one another as a function of the measured capacitance. As discussed above, Shaw discloses a mouse with a roller ball surrounded by sensors. The sensors are within the housing that includes the ball. Therefore, the mouse would be only able to detect the distance the ball dropped as the mouse was lifted off the tracking surface and not a **distance of spatial separation between the handheld optical mouse device and the tracking surface relative to one another** as recited in claim 1. Advantageously, the distance between the device and the tracking surface is known and **modes of operation** of the device may be selected accordingly. For example, the device may enter (1) a tracking mode when a first distance of separation is detected, (2) a non tracking mode when a second distance of separation is detected, and (3) a third mode when a third distance of separation is detected. Thus, Applicant respectfully requests reconsideration and withdrawal of the rejection of independent claim 1. Claim 29 has been similarly amended as claim 1 and is allowable for the same reasons as claim 1. Claims 2-5, 8-26, 31, 32, and 37-40 which depend from claims 1 and 29, respectively, are also submitted as patentable for the same reasons as set forth above with respect to claims 1 and 29.

It is believed that no fees are due in connection with this Amendment D. If however, the Commissioner determines a fee is due, the Office is hereby authorized to charge said government fees to Deposit Account No. 19-1345.

Applicant wishes to expedite prosecution of this application. If the Examiner deems the claims not in condition for allowance, the Examiner is invited and encouraged to telephone the undersigned to discuss making an Examiner's amendment to place the claims in condition for allowance.

Respectfully submitted,

/Robert M. Bain/

Robert M. Bain, Reg. No. 36,736
SENNIGER POWERS LLP
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400